

We Claim:

1. A turf maintenance machine for traversing a turf surface having debris elements and turf fill material disposed thereupon, said machine comprising:

a main sweeper brush for engaging the debris elements and the turf fill material and transferring the debris elements and the turf fill material toward a debris hopper; and

a filter device for receiving the transferred debris elements and the turf fill material, and for separating the debris elements from the turf fill material, wherein the debris elements are captured by the machine for subsequent disposal and the turf fill material is returned to the turf surface as the machine traverses the turf surface.

2. A turf maintenance machine according to claim 1, wherein the filter device is disposed upon the machine forwardly from the main sweeper brush.

3. A turf maintenance machine according to claim 1, wherein the filter device includes multiple filter stages that separate the debris elements from the turf fill material.

4. A turf maintenance machine according to claim 3, wherein one of the multiple filter stages includes a wire screen and another one of the multiple filter stages includes an expanded metal screen.

5. A turf maintenance machine according to claim 1, wherein the filter device is disposed within the debris hopper.

6. A turf maintenance machine according to claim 1, further comprising a turf engaging structure for preconditioning the turf surface prior to an engagement by the main sweeper brush.

7. A turf maintenance machine according to claim 6, wherein the turf engaging structure includes a transverse planar element.

8. A turf maintenance machine according to claim 6, wherein the turf engaging structure is movable coupled to the machine so that varying degrees of turf engagement may be implemented.

9. A turf maintenance machine according to claim 1, further comprising a turf surface grooming device which engages the turf surface and biases a substantial portion of the engaged turf surface into a direction of machine travel.

10. A turf maintenance machine according to claim 9, wherein the turf surface grooming devices includes at least one brush.

11. A turf maintenance machine according to claim 9, wherein the turf surface grooming device is movably coupled to the machine so that varying degrees of down force may be transferred to the turf surface grooming device.

12. A turf maintenance machine for collecting debris elements from a turf field having particulate turf fill material disposed thereupon, said machine comprising:

a main sweeper brush for engaging the turf field and transporting debris elements and turf fill material toward a debris hopper; and

a filter device for receiving the main sweeper brush transported debris elements and the turf fill material, the filter device separating the turf fill material from the debris elements and returning the turf fill material to the turf field as the machine traverses the turf field.

13. A turf maintenance machine according to claim 12, wherein the filter device is disposed forwardly from the main sweeper brush on the machine.

14. A turf maintenance machine according to claim 12, wherein the filter device includes multiple filter stages.

15. A turf maintenance machine according to claim 14, wherein one of the multiple filter stages includes a wire screen and another one of the multiple filter stages includes an expanded metal screen.

16. A turf maintenance machine according to claim 12, wherein the filter device is disposed within the debris hopper.

17. A turf maintenance machine according to claim 12, further comprising a turf engaging structure for preconditioning the turf field prior to an engagement by the main sweeper brush.

18. A turf maintenance machine according to claim 17, wherein the turf engaging structure includes a transverse planar element.
19. A turf maintenance machine according to claim 17, wherein the turf engaging structure is movably coupled to the machine so that varying degrees of turf engagement may be implemented.
20. A turf maintenance machine according to claim 12, further comprising a turf surface grooming device which engages the turf field and biases a substantial portion of the engaged turf field into a direction of machine travel.
21. A turf maintenance machine according to claim 20, wherein the turf surface grooming device includes at least one brush.
22. A turf maintenance machine according to claim 20, wherein the turf surface grooming device is movably coupled to the machine so that varying degrees of down force may be transferred to the turf surface grooming device.
23. A turf maintenance machine for collecting debris elements from a turf field having particulate turf fill material disposed thereupon, said machine comprising:
- a main sweeper brush for engaging the turf field and transporting debris elements and turf fill material toward a debris hopper; and
  - a turf engaging structure disposed upon the machine forwardly relative to the main sweeper brush, said turf engaging structure for contacting the turf field and loosening debris elements for subsequent engagement by the main sweeper brush.
24. A turf maintenance machine according to claim 23, wherein the turf engaging structure includes a transverse planar element.
25. A turf maintenance machine according to claim 23, wherein the turf engaging structure is movably coupled to the machine so that varying degrees of turf engagement may be implemented.

26. A turf maintenance machine for collecting debris elements from a turf field having turf fill material disposed thereupon, said machine comprising:

a main sweeper brush for engaging the turf field and transporting debris elements and turf fill material toward a debris hopper; and

a turf surface grooming device disposed upon the machine rearwardly relative to the main sweeper brush, said turf surface grooming device engages the turf field and biases a substantial portion of the engaged turf field into a direction of machine travel.

27. A turf maintenance machine according to claim 26, wherein the turf surface grooming device includes at least one brush.

28. A turf maintenance machine according to claim 26, wherein the turf surface grooming device is movably coupled to the machine so that varying degrees of down force may be transferred to the turf surface grooming device.

29. A method of maintaining a turf field having debris elements and fill material disposed thereupon, said method including the steps of:

providing a machine having a main sweeper brush, a filter device, and a hopper;

traversing upon the turf field with the machine;

engaging the turf field with the main sweeper brush to transport debris elements and turf fill material toward the debris hopper;

receiving the sweeper transported debris elements and the turf fill material at the filter device, the filter device separating the turf fill material from the debris elements; and

returning the turf fill material from the filter device to the turf field as the machine traverses the turf field.

30. The method of claim 29 further comprising the step of:

preconditioning the turf surface by a turf engagement structure disposed upon the machine in front of the main sweeper brush, said turf engagement structure loosening a debris element from the turf field prior to transport of said loosened debris by the main sweeper brush.

31. The method of claim 29 further comprising the step of:

grooming the turf surface by a turf grooming device disposed upon the machine behind the main sweeper brush, said turf grooming device biasing a substantial portion of the turf field into the direction of machine travel.

32. A method of maintaining a turf field having debris elements and fill material disposed thereupon, said method including the steps of:

providing a machine having a main sweeper brush, a filter device, and a hopper;

traversing upon the turf field with the machine;

engaging the turf field with the main sweeper brush to transport debris elements and turf fill material toward the debris hopper;

separating the sweeper transported debris elements and the turf fill material at the filter device; and

returning the separated turf fill material from the filter device to the turf field as the machine traverses the turf field.

33. The method of claim 32 further comprising the step of:

preconditioning the turf surface by a turf engagement structure disposed upon the machine in front of the main sweeper brush, said turf engagement structure loosening a debris element from the turf field prior to transport of said loosened debris by the main sweeper brush.

34. The method of claim 32 further comprising the step of:

grooming the turf surface by a turf grooming device disposed upon the machine behind the main sweeper brush, said turf grooming device biasing a substantial portion of the turf field into the direction of machine travel.